PROCESSES AND PROPERTIES INDEX

ca

19

Influence of moisture in sand on the mixing of the glass batch. I. I. Kit[illegible] and Ya. A. [illegible]. *Keram. i Steklo* 6, 418-9(19[illegible]) — The results of trials showed that a min. quantity of moisture of 0.3 to 1.2% depending on the kind of sand used. The permissible max. was 3-5%. greatly increased the homogeneity of the batch. M. V. K[illegible]

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

CA 14

Fusing glass containing blast-furnace slag. I. I. Kitaigorodskii and I. P. Karev. *Keram. i Steklo* 6, 468-9(1930); cf. *C. A.* 24, 8064.—Investigations showed that granulated blast-furnace slag (compn. given) can be used as an admixt. in glass. Glass contg. 30% of its weight in blast furnace slag was composed of silicic acid 70, alumina 3.2, CaO 16 and Na_2O 10%. The glass obtained was of good quality. The batch was made up of sand 1000, sulfate 275, soda 160, slaked lime 180 and charcoal 10 kg. The glass contained 15% Na oxide. M. V. Kondoidy

ASA-SLA METALLURGICAL LITERATURE CLASSIFICATION

I. I. KITAIGORODSKIY

Chemical-resisting glass for laboratory dishes. I. I. Kitaigorodskii and B. M. Kurkovskii. *Trans. State Inst. for Testing Building Materials* ... (Moscow) No. 31, 3 43(1931). —The object of this investigation was to obtain a glass having the qualities of Jena 20 but of more simple compn. At the same time it was necessary to be able to prepare the glass under ordinary factory conditions. The compns. most successful in regard to factory and lab. conditions were the following for glasses no. KIR 843, 845, 846 and 851, resp.: (1) chemical compn., SiO_2 70, 74, 74, 74, 76; B_2O_3 12, 8, 5.5, 3, 4; Al_2O_3 3, 3, 3, 3, 3; CaO.MgO 10, 10, 10, 10, 10; Na_2O 5, 5, 7.5, 10, 7; (2) mineral compn., sand, 66.4, 71.3, 71.3, 71.3, 73.3, kaolin 7.7, 7.7, 7.7, 7.7, 7.7; dolomite 19.66, 19.66, 19.66, 19.66, 19.66; boric acid 21.4, 14.28, 9.8, 5.35, 7.14, soda 7.7, 7.7, 13.12, 18.7, 12.0, saltpeter 4.0, 4.0, 4.0, 4.0, 4.0. Of these mixts. Nos. 845 and 846 were tested out on a factory scale. A temp. of 1350° was used. Phys. properties and resistance to chemicals of these two glasses were examd. It was found that they completely answer the requirements in regard to resistance to chemicals and temp. changes. It was also found that by using magnesia glass and dolomite as raw materials the desired glass can be obtained. Since the B content is low in glasses 845 and 846, cheap raw materials can be used in their ...

S. L. Madorsky

ASA-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA

19

Sodium silicate as an accelerator in melting glass. I. I. [illegible] and N. V. [illegible]. *Zhur. Prikladnoi Khim.* 4, 215 (1931).—Use of Na_2SiO_3 as a source of Na in glass mfg. speeds up the process, particularly at 700–1000° (max. at 800°). The quantity of CaO dissolved by molten glass at 1100° is 1.5–2 times less with Na_2SiO_3 than with other Na salts; this shows that glass is formed at lower temps. V. K.

Glass-melting tanks. N. I. [illegible]. *Keram. i Steklo* 7, No. 5, 24 (1931).—The manuf. of glass-melting tanks from the Chasov-Yar refractory clay is described. A tank with a capacity of 1 ton of glass can be used for an av. of 25 fusions.

M. V. K[illegible]

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA

19

PROCESSES AND PROPERTIES INDEX

Bottle glass in U. S. S. R. I. I. Kitaigorodskii. *Keram. i Steklo* 7, No. 3, 10-14 (1931).—Data are given on the compn. and properties of bottle glass manufactured in Russia. Investigations showed that: (1) The stability of bottle glass to alkali depends on the quantity of R_2O_3 and SiO_2 present in the glass. (2) Stability to water depends on the quantity of R_2O_3, MgO and R_2O present in the glass. (3) Stability to acids depends on the quantity of R_2O and MgO present in the glass. M. V. K.

METALLURGICAL LITERATURE CLASSIFICATION

19

Light absorption of glass colored by iron oxide. I. I. Kitaigorodskii, T. A. [illegible] and N. V. [illegible]. *Keram. i Steklo* 7, No. 6, 16-9(1931). The max. of transparency is displaced toward the long waves in the majority of glasses with an increase of Fe content and fused with reducers (glasses contg. MgO, MgO + CaO, CaO + BaO, ZnO and ZnO + CaO). Glasses with 1% Fe which are most transparent in the blue and violet parts of the spectrum contain CaO + BaO, CaO + MgO, BaO + CaO + ZnO; glasses with 3% Fe contain CaO and ZnO, and those with 6% Fe contain BaO, ZnO and CaO + BaO. *Zinc and baryta glasses* (without CaO) have a very low transparency in the red orange parts of the spectrum. Glasses most transparent in the violet part of the spectrum possess a certain transparency in the ultra violet range.

M. V. [illegible]

PROCESSES AND PROPERTIES INDEX

Volatilization of fluorine during glass melting. I. I. Kitaigorodskii and S. M. Kurovskaya. *Keram. i Steklo* 7, No. 11-2, 42(1931).—The possible causes of volatilization of fluorine are (1) the formation of SiF_4, (2) the volatilization in the form of mol. F, (3) the sublimation of undecomposed fluorides and (4) the formation and evapn. of HF. The work of Edge and Krause and that of the authors show that the loss in F must be ascribed to the volatilization either of the HF, formed during melting of the glass, or of the mol. F.

M. V. Kondoidy

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

Influence of aluminum oxide on some physicochemical properties of glass in dependence on raw materials. I. I. KITAIGORODSKII AND M. O. CHERNYAK. *Trans. State Expt. Inst. Glass* (U. S. S. R.) No. 1(1932); *Ceram. Abstracts* (in *J. Am. Ceram. Soc.*) 11, 494-5.—In 2 glasses of the compns. $6SiO_2 \cdot CaO \cdot 2R_2O$ and $6SiO_2 \cdot 0.8CaO \cdot 1.2R_2O$, 0.1, 0.2, 0.3 and 0.4 CaO were replaced by Al_2O_3. Feldspar, raw kaolin, fired kaolin and $Al_2(SO_4)_3$ were used for this oxide. Thirty-four glasses in 8 series were melted under different conditions, and it was found that some properties of the glasses were affected by the kind of raw materials in which Al_2O_3 was introduced. Glasses with feldspar were softer than those contg. kaolin but much more difficultly purified. Kaolin makes the glass shorter sometimes and increases the surface stress in contrast with feldspar. $Al_2(SO_4)_3$ could not be used. The resistance to the attack of NaOH was better in glasses with feldspar than in kaolin glasses; the resistance of glasses melted with fired kaolin was higher than that of glasses prepd. with raw kaolin. The inclination to devitrification is the smallest in glasses with feldspar; it is the highest in glasses melted with fired kaolin, and lower in those melted with raw kaolin. O. G.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA

19

Determining the chemical resistance of soda-lime glasses. I. I. KITAIGORODSKII AND A. I. POLINKOVSKAYA. *Trans. State Exptl. Inst. Glass* (U. S. S. R.) No. 1(1932); *Ceram. Abstracts* (in *J. Am. Ceram. Soc.*) 11, No. 9, 485.—A comparison was made of (1) the method of Turner, (2) the same method with some changes of the Russian Silicate Institute, (3) the standard method of the Deutsche glastechnische Gesellschaft, (4) the autoclave method and (5) the beacon method of the Bureau of Standards. These methods suffice only for detg. the resistance to water. The first three methods produce satisfactory results. The method of the Bureau of Standards showed exptl. errors up to 100%, with a small loss in wt. The autoclave method at 6 atm. is the most rapid and gives the highest corrosion. The use of glass particles of 64- to 144-mesh size is recommended.

F. H.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1a

19

Volatilization of boric acid during glass melting. I. I. KITAIGORODSKII AND M. S. FEDOROVA. *Trans. State Exptl. Inst. Glass* (U. S. S. R.) No. 1([illegible]); *Ceram. Abstracts* (in *J. Am. Ceram. Soc.*) 11, 518.—The volatilization of boric acid during the melting process of a glass of the compn. SiO_2 B_2O_3 RO R_2O, was investigated in regard to viscosity, chem. compn., and the quantity of glass present. The change in viscosity was obtained by replacing 0.25 or 0.50 mol. SiO_2 by Al_2O_3. The influence of the quantity of glass was ascertained from addns. of the same glass in crucibles of different capacity (70, 200, 600 and 800 g.) and subsequent analysis. Concerning the influence of the chem. compn. of the glasses on the volatilization of boric acid, it was detd. that in Zn glasses the evapn. is lowest, while in baryta glasses it is highest. The volatilization, in relation to the viscosity of the glass, is lowest in glasses of an av. viscosity. Larger quantities of melt produce less volatilization.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

KITAIGORODSKI, I. I.

PROCESSES AND PROPERTIES INDEX

CA 19

Use of sodium bisulfate in glass manufacture. I. I. Kitaigorodski and M. A. Tsarlitsin. *Keram. i Steklo* 8, No. 1, 19-22 (1932).—A description of tests made on the use of $NaHSO_4$ instead of soda and sulfate in the production of glass. It was found that: (1) $NaHSO_4$ may be transformed into sulfate by firing it with coal, or (2) $NaHSO_4$ may be used without previous treatment for obtaining glass and silicates, although a larger amt. of silica is reqd. during melting. M. V. Kondoidy

KITAJGORODSKIY, I. I.

Easily fusible lake clays in glass melting. I. I. Kitaigorodskii and V. V. [illegible] Kalinskaya. *Keram. i Steklo* 8, No. 5-6, 23-25(1932).—Attempts to use easily fusible lake clays as the main raw material of the glass batch showed that these clays can be used with success for the manuf. of dark glass. These clays can be introduced in a quantity up to 93% of the weight of the glass obtained. [illegible] to melt these clays under usual conditions. M. V. K.

B-I-9

Refining glass by the generation of gas. I. I. Kitaigorodskii and I. A. Solovushkov (Mem. Phys.-Chem. Glass, 1938, 40; Sprechsaal, 1938, 68, 608).—Raising the temp. during the generation of gas improves the degree of refining. The optimum temp. is 1300°.

Ch. Abs. (e)

ASA-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

Thermal analysis of the system lithium fluoride-lithium metaborate. I. I. Kitaigorodskii, T. A. Popova and O. K. Botvinkin. *Izv. Sekt. Fiz.-Khim. Anal.* (Leningrad) 6, 135-9; *J. Phys. Chem.* (U. S. S. R.) 6, 360-6(1935).—A thermal investigation of the system $LiF-LiBO_2$ was undertaken with the object of finding a glass capable of transmitting ultra-violet rays. The melting diagram contains a max. corresponding to the complex compd. $2LiF.LiBO_2$. Two polymorphic transformations in this compd., at 545° and 686°, were detd., also 2 in LiF, at 512° and 702°, and 1 in $LiBO_2$ at 755°. Eutectics were found at 680° for $LiF-2LiF.3LiBO_2$, contg. 66% $LiBO_2$, and at 710° for $LiBO_2-2LiF.3LiBO_2$, contg. 80% $LiBO_2$. S. L. Madorsky

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA

19

Magnesia as a substitute for sodium oxide in mechanized manufacture of glass. L. I. Kitaigorodskii and N. S. Brugman. *Keram. i Steklo* 9, No 2, 22-6(1933). The partial replacement of Na_2O by MgO in dolomite was investigated; Mg glasses with addns. of Al_2O_3 were also studied. Dolomite of the av. compn. SiO_2 0.66, Al_2O_3 0.82, Fe_2O_3 0.80, CaO 30.90, MgO 20.24% was used. The most important properties of these glasses, as viscosity, ability to crystallize thermal expansion and chem. stability, were detd. Partial replacement of Na_2O by MgO is possible and desirable. Compns. are given for window and bottle glass which would permit the reduction of the Na_2O content by 20 or 25%. The max. quantity of MgO for replacing Na_2O is 3-3.5%. The lowering of the Na_2O content and its partial replacement by MgO improves the quality of the glass, particularly its thermal stability. The working properties of the glass are also improved.

M. V. Kondoidy

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

19

Manufacture of Fresnel lenses in U. S. S. R. I. I. Kitaigorodskii. *Keram. i Steklo* 9, No. 4, 3-6(1933).—The conditions under which Se ruby glass with a definite ... is obtained in open glass-melting pots were detd. It has been found that: (1) The introduction of K_2O into the batch is unnecessary for obtaining red lenses. The viscosity of the glass mass is the essential factor. (2) 0.1% Se is sufficient for obtaining a definite intensity of the red color. The volatility of Se is 70-90%. (3) The melting time and melting conditions have considerable influence. (4) Depending on the way in which the colorizer (metallic selenide, selenite or selenate) is introduced and hence depending on the course and direction of the reaction toward reduction or oxidation, the reducing or oxidizing conditions must vary at the beginning of the melting. (5) Satisfactory results were obtained with metallic Se, although more stable results were obtained with CdSe or a mixt. of Se and metallic Zn. (6) A completely colorless glass was obtained when saltpeter was added to the red glass batch. M. V. K.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

Chemical enrichment of quartz sand, clays and kaolins. I. I. Kitaigorodskii and I. S. Lande. *Keram. i Steklo* 9, No. 5, 7-10(1933). Conditions with regard to [illegible] and [illegible] HCl and [illegible] content of quartz sand, clays and kaolins when treated with [illegible] HCl and [illegible] acid are discussed. Very good results were obtained with HCl at [illegible] conc. Fe_2O_3 was decreased from 2.07 to 0.15%. The treatment with Cl was unsatisfactory. M. V. K.

METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

Dust-like sand in the process of forming glass. I. I. Kitaigorodskii and I. V. Myakhkov. *Keram. i Steklo* 9, No. 6, 14-19(1933).—It has been found that (1) The employment of dust-like sand in glass melting is possible and expedient. (2) The dusting of the batch contg. dust-like sand is harder when using moist sand because moisture promotes the enveloping of the sand grains with alk. particles producing a mech. adherence of the mixed components. To obtain a homogeneous batch, the max. moisture of sand should be 8%. (3) The reactions of the formation of glass proceed more rapidly with a dust-like sand than with coarse sand. (4) The beginning of the viscous state in a batch contg. dust-like sand appears between 850° and 950°, while a batch with coarser sand begins to vitrify at 1000-1150°. (5) The introduction of sulfate (3 Na_2O for 100 parts by weight of the glass) into the dust-like batch makes it possible to obtain glass without bubbles. (6) The same amt. of sulfate introduced into a batch with coarser sand retarded the course of the reactions of the formation of silicates, producing an insufficiently melted glass. M. V. Kondoidy

METALLURGICAL LITERATURE CLASSIFICATION

CA

19

PROCESSES AND PROPERTIES INDEX

Refining glass by the generation of gas. I. I. Kitai-
gorodskii and Ya. A. Shkol'nikov. Mos. Phys.-Chem.
w/GIIT (Moscow) 40 (1933); Sprechsaal 68, 470(1935).
Expts. were made on an unrefined glass with bubbles in
an elec. lab. furnace. Raising the temp. during the
generation of gas improves the degree of refining, but it
is best when the refining is done at a const. temperature
(1250°) for the entire time. The rate of refining of a
glass is affected by its compn. Longer refining improves
the quality of the glass. The refining can be accelerated
by introducing a small porcelain tube 0.9, 1.5 or 3.7 mm.
in di... into the batch. M. V. Kondoidy

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA

19

PROCESSES AND PROPERTIES INDEX

Selenium pigment for glass. I. I. Kitaigorodskii. Russ. 39,281, Aug. 31, 1934. A Se pigment is prepd. by fusing Zn or Cd arsenide with sulfides of one of the above metals in the presence of reducing agents.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

13-2-9

Formation of sulphate in soda-glass. I. I. [illegible] and Y. A. [illegible] (Nauch.-Issl. Inst. Stekla, No. 1, Steklotekh., 1934, 116—139).—SO_2 in a gas mixture reacts with the carbonates in molten soda-glass, forming sulphates (I) which produce a film on the surface. The quantity of (I) formed depends on the temp., time of action, and [SO_2], but not on the batch composition. SO_2 produces bubbles on the surface, giving a matt appearance. Ch. Abs. (e)

PROCESSES AND PROPERTIES INDEX

Co

19

The preparation of glass free from iron. I. I. Kitai-gorodskii and L. E. Landa. *Compt. rend. acad. sci. U. R. S. S.*, 287 70(in German 271-3)(1934).—A procedure is described for the removal of Fe impurities from quartz sand by means of gaseous HCl. The best results are obtained by preliminary crushing and heating of the sand and then treating with the HCl at about 900°.

Morris Muskat

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

KITAIGORODSKII, I. I.

Kitaigorodskii, I. I. DUST-LIKE SILICA OF MAGNITOGSK. *Keram. i Steklo*, 10, 30-31 (1934).—The Magnitorsk SiO_2 is a fine powder consisting of quartz grains 0.005 to 0.05 mm. size; the sand contains a great number of needle like prismatic crystals. The chemical analysis is: 94.62 SiO_2, 3.9 Al_2O_3, 0.17 Fe_2O_3, 0.35 MgO, 0.15% CaO. Experiments showed that samples containing 0.1% Fe_2O_3 before concentration contained only 0.001 Fe_2O_3 after concentration. Some samples contain only traces of Fe oxides. Glass of high quality was produced.

Replacing lead oxide by other oxides in electro-tubing glass. I. I. Kitaigorodskii and A. I. Pshchevskaya. *Keram. i Steklo* 10, No. 1, pp 41(1934).—In a basic glass of SiO_2 61%, PbO 30%, Na_2O 1% and K_2O 7%, PbO was partly replaced by various amts. of MgO, CaO, ZnO and BaO; a series of pure PbO glasses was also studied. It was found that (1) BaO can partly replace PbO in glass tubes because of an almost identical viscosity at temps. below 1200° and a similarity of the softening points and that of the sp. gr. (2) ZnO in small quantities (5%) may partly replace PbO. (3) MgO in amts. of 5-15% cannot replace PbO. (4) The introduction of CaO instead of PbO considerably changes the physicochem. properties of glass and therefore cannot be used.

M. V. Kondoidy

1A

Theory and practice of the production of selenium rubies. I. I. Kitaigorodskii. *Keram. i Steklo* 10, No. 5, 9(1934).—(1) All red Se glasses are divided into 2 groups: (a) stable and (b) unstable glasses. Glasses of the first group do not change their color during reheating, working, annealing or thermal treatment. Glasses of the 2nd group change their color during all the mentioned stages, changing from yellow to red and further to [illegible]. (2) Glasses (a) are colored by stable Se compds.; glasses (b) are colored by a colloidal pigment (Se). (3) Stable red glasses are obtained only when a solid soln. of Cd selenide and sulfide is used as a pigment. The color tone of the glass depends on the proportion of Cd selenide to that of Cd sulfide in the solid soln. Tests showed that the instability of color is due to the fact that Cd selenide and Cd sulfide have not had time to produce a solid soln., and because of an insufficiently reducing atm. a part of it oxidizes, forming various unstable Se compds. The basic condition for obtaining a stable color lies in the pigment, method of its prepn. and conditions of melting. (4) Of special importance are the compn. of the batch and the presence of a reducer when coloring glasses colloidally with free Se. The conditions of melting, temp. and atm. are important also. The introduction of electrolytes considerably affects the colloidal coloring of the glass with free Se; likewise, the amt. of electrolyte and its nature. (5) When metallic Se was introduced into the glass mass under certain conditions (mixing it with Cd sulfide in the presence of Zn oxide and a reducer), the coloring of the glass was similar to that when the pigment is introduced in the form of a solid soln. It is difficult to obtain glasses (a), *e. g.*, stable, with regard to color, when using metallic Se if the conditions of melting are not carefully observed. (6) When mfg. hollow ware and crystal glass, Se glasses which obtain their color after the thermal treatment are to be preferred for obtaining the whole scale of color tones. (7) Red Se-soda-Ca-silica glasses were produced. The results of ultra-microscopic investigations of various samples of Se glasses are dealt with. It is not possible to reject the theory of colloidal coloring of Se glasses.

M. V. K[illegible]

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

Dust-like silica of Magnitorsk. I. I. Kitaigorodskii. Keram. i Steklo 10, No. 6, 20-1(1934).—The Magnitorsk SiO_2 is a fine powder consisting of quartz grains 0.006 to 0.33 mm. size; the sand contains a great number of needle-like prismatic crystals. The chem. analysis is: 94.02 SiO_2, 3.9 Al_2O_3, 0.17 Fe_2O_3, 0.25 MgO, 0.15% CaO. Expts. showed that samples contg. 0.1% Fe_2O_3 before concn. contained only 0.014 Fe_2O_3 after concn. Some samples contain only traces of Fe oxides. Glass of high quality was produced. M. V. Kondoidy

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

19

Theory and first experiments of the "thin-layer" method of glass melting. I. I. Kitaigorodskii. *Keram. i Steklo* 11, No. 12, 21-7(1934).—The theory of the "thin-layer" method of glass melting and of the feeding of the tank with a continuous thin stream of the batch are discussed. The results of investigations made at the Inst. of Glass show that: (1) With increased fineness of grinding of raw materials, the reaction of the silicate formation proceeds more rapidly. (2) The time of the formation of glass is greatly lowered with a decrease in the size of sand grains; the size of the sand grain has a greater effect on the melting time than marble grains, while the grain size of soda has no effect whatever. (3) The increase of the temp. from 1300° to 1400° considerably shortens the time of glass formation (3 times). When melting "insulated" particles of the batch, the process of glass formation occurs much sooner than when melting the batch in the usual way. (4) The reaction of the silicate formation in a layer of 1 cm. thickness proceeds more rapidly than when the batch is 2 or 3 cm. thick. (5) There is a rectilinear dependence between the time of the formation of glass and the size of the fritted particle melting. Expts. showed that: (*a*) Charging the batch in heaps slows down the formation of silicates and the process of refining. (*b*) The batch charged in heaps favors the formation of defects in the glass mass and lowers its quality. (*c*) The consumption of fuel is greatly lowered when the batch is fed continuously as a thin stream; this method decreases the magnitude of thermal shock and increases the life of refractories. M. V. K.

ASA-SLA METALLURGICAL LITERATURE CLASSIFICATION

KITAYGORODSKIY, I. I.

"Theory of Glass Formation and Methods of Making Glass," Moscow-Leningrad, 1935

PROCESSES AND PROPERTIES INDEX

19

Removing iron oxides from the glass melt. I. I. Kitaigorodskii and L. N. Zimerman. Russ. 44,318, Sept. 30, 1935. Fe oxides are removed by introducing into the melt NaCl and KNO_3.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA

PROCESSES AND PROPERTIES INDEX

14

Theory of the preparation of glass in thin layers. I. I. Kitaigorodskii. *Compt. rend. acad. sci. (U. R. S. S.)* 38, 130-4(in German) 142-6)(1943).—Advantages of melting glass in a single thin layer rather than in a mass of successive layers are pointed out. Decreasing the size of quartz particles greatly decreased the time of melting. The effect was considerably less for limestone addn. and nonexistent for soda. The speed of melting increased proportionately to the decrease in thickness of the layer. F. S. Keller

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

BC

A-1

Volta [illegible] photo-effect in silver halides. E. Kuzmanov, [illegible] Krasnopevtsev, and A. Molchanov (Acta Physicochim. [illegible] U.R.S.S., 1935, 3, 261—267).— [illegible] AgCl surface and [illegible] polygons, AgI and Ag or Au are described. [illegible] O. J. W.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

Ca

18

The interaction of sodium chloride and kaolin at high temperatures. I. I. Knolgrudski and V. I. Bakunyaeva. *J. Applied Chem.* (U. S. S. R.) 8, 280-7(1935). In the heating of a mixt. of NaCl and kaolin, due to the [illegible] of the H_2O, a vigorous reaction takes place whereby Na silicates are formed. This reaction is very intensive at 800-1000°. With an increase in the temp. the amt. of NaCl participating in the reaction diminishes, because of increased volatility of NaCl. Best results are obtained with a mixt. contg. 18% NaCl and the max. temp. for the interaction of NaCl and SiO_2 in the presence of kaolin is 1100°. Four references. A. A. Bochtlingk

METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

19

Striation and rate of drawing of the Fourcault ribbon. I. I. Kitaigorodskii. *Keram. i Steklo* 11, No. 3, 18-19 (1935).—Details of the production of glass on Fourcault machines in Russia are given. One of the chief reasons for the appearance of striae is the unsatisfactory compn. of the glass batch. M. V. Kondoidy

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

Conditions under which the (glass) batch separates into layers. I. I. Kitaigorodskii, V. I. Sokunyeva and V. V. Pollyak. Keram. i Steklo 11, No. 5, 22-6(1935).—A formula of Lyashchenko for matching of the granulometric compn. of the batch can be used for dust-like materials either with a laminary or turbulent motion. The formula is only approx. for coarse-grained batches. Generally the basic premise for a min. sepn. of the batch into sep. layers is that the size of fractions of sep. components shall be equal. Soda tends to sep. the most, and sand the least. M. V. Kondoidy

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

Theory and practice of accelerated drawing of glass by the Fourcault method. I. I. Kitaigorodskii. *Keram. i Steklo* 11, No. 7, 8-7([illegible]).—The chief defects of the Fourcault glass produced in the U. S. S. R. are its low chem. resistance, great striation, and the presence of various inclusions, such as stones, cryst. formations and bubbles; these defects are due chiefly to an incorrect compn. of the glass. The latest investigations in Europe and the U. S. dealing with the compn., melting, refining and cooling of glass are discussed, and the results of studies made by the Russian Inst. of Glass analyzed. Conclusions: (1) A coarse-grained batch melts much more slowly than a fine-grained batch; (2) during the melting of such a batch, the process of glass formation occurs very rapidly. Constructional details to improve Fourcault machines are discussed. M. V. Kondoidy

PROCESSES AND PROPERTIES INDEX

Removing iron compounds from sand. I. I. Khalgurgulski and L. S. Lamir. Russ. 47,048, May 31, 1936. The sand is treated with HCl at 600-900°.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000722920005-4"

Cu

19

Unbreakable glass. I. I. Kitaigorodskii. Russ. 47,151, May 31, 1936. Two or more layers of glass with various durations of solidification are placed on each other during the manufacturing process or while cold and are then gradually heated to complete homogenization.

ASD SLA METALLURGICAL LITERATURE CLASSIFICATION

CA 19

PROCESSES AND PROPERTIES INDEX

Concentration of quartz sands by means of the modified Adams method. I. I. Khaigurodskii and O. O. Sentyurin. *Keram. i Steklo* 12, No. 4, [illegible](193[illegible]).—A modified Adams method for purifying quartz sands was used. The method consisted in treating washed sand in $FeSO_4 \cdot 7H_2O$ soln. with 5% H_2SO_4. The results are tabulated. A 2-hr. treatment eliminated 90% of the Fe, while a 20-hr. treatment eliminated 98%.

M. V. Kondoidy

METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

19

The theory and the practical application of the intensification of the processes of boiling and of manufacture of glass. I. I. Kitaigorodskii. *Trudy Works* mosk. [illegible] ... No. 3-4, 37-44; *Khim. Referat. Zhur.* 1, No. 11-12, 114(1938); cf. *C. A.* 31, 822[illegible].—Expts. were made on glasses contg., resp.: SiO_2 71.[illegible], 71.34; $Al_2O_3 + Fe_2O_3$ 1.28, 1.28; CaO 9.[illegible], 8.66; MgO 2.06, 3.11; Na_2O 14.[illegible], 13.13; SO_3 0.78, 0.81. Both behave satisfactorily during the boiling process, and the boiling velocity is higher than that of Mg-free glass. Productivity of the entire process of glass manuf. is increased by including Mg and Al in the batch.

W. R. Henn

ASA-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

SA

AT 5

4331. Self-Hardening as a Method for Increasing Strength of Glass. I. I. Kitaigorodsky. *Comptes Rendus (Doklady) de l'Acad. des Sciences, U.S.S.R.* 19. 9. *pp.* 711-714, 1938. *In English.*—Compound sheets of glass have been formed, the outer layers being of quick hardening glass and the inner layers of slow hardening glass. Of two pairs of glasses, the results are found equal in mechanical strength to a commercial glass known as "securite." Coloured glass may also be made by combining layers of coloured and colourless glasses. P. S.

See also Abstracts 4330, 4376, 4802, 4723

ASA-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

Determination of general tendency of glass to crystallize. I. I. Kitaigorodskii and T. N. Keshishyan. *J. Applied Chem.* (U. S. S. R.) 12, 1330 (in French, 1331) (1939).—The total tendency of glass to crystallize depends on the no. of crystn. centers, Ko, and on the linear velocity of the growth of crystals, Kg. The area obtained by superposition of the curve of Kg against temp. on the curve of Ko against temp. represents the true tendency of a glass to crystallize. A. A. Podgorny

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

CA 17

Window glass with a lowered alkali content. I. I. Kitaigorodskii, V. I. Sokunyaeva and I. N. Keshishyan. Stekol'naya Prom. 14, No. 5, 29-31(1938).—From expts. on [illegible] different glasses it is concluded that glasses contg. RO equal to 9-12% Na_2O melted well when they contained RO equal to 10, 11, 12, 13 and 14%. Glasses contg. 16, 18, 20% RO melted well only when the ratio of CaO to MgO was 1:1. Glasses contg. 12% Na_2O melted badly when RO was 16-18%; other glasses melted well at 14% and Al_2O_3 was 8%. Glasses contg. 12% Na_2O had a strong tendency to crystal. [illegible] when RO was 12-18%. Glasses having RO over 16% melted satisfactorily. Glasses contg. 10% Na_2O melted satisfactorily only when RO was 16%. The best results in regard to crystn. were obtained with glasses contg. 1.5% Al_2O_3, and with RO 12, 13, 14, 16%. In glasses with RO 12 and 12%, the best were those with a ratio CaO: MgO of 4:1, while with RO 14 and 16%, the best results were obtained with a ratio of CaO to MgO 3:1. Lower SiO_2 content gives lower viscosity at 1200° and 1100°, at 1000° and 900° glasses contg. less SiO_2 were more viscous. A table gives the recommended compns. of window glass manufactured by the Fourcault method. M. V. C.

METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

CA

Role of physics in the glass industry. I. I. Kitaigorodskii. *Uspekhi Fiz. Nauk* 21, 328-41(1939).—K. discusses the various types of modern glasses produced in the U. S. S. R. Cf. Sullivan, *J. Applied Phys.* 8, 122(1937).

F. H. Rathmann

METALLURGICAL LITERATURE CLASSIFICATION

KITAIGORODSKII, I. I.

Kitaigorodskii, I.I., and Keshishvan, T.N. CALCINED MULLITE REFRACTORY Compt.rend.acad. sci. U.R.S.S. 23, 152-54 (1939)- A mixture of Al_2O_3 72, SiO_2 25, and pure MgO 3% was calcined at 1500° for 6 hrs and then at 1700° for 30 min. The product was a highly resistant refractory, negligibly attacked by molten glass at 1300°

A. E. S.

Automatically annealed glass sheet. I. I. K[illegible] and N. V. [illegible]. Russ. [illegible], April [illegible], 1940 [illegible] 30.—The glass sheet is made of three or more layers of glass having different coefficients of expansion. These layers are either drawn simultaneously from the melt or superimposed one upon the other. In the latter case, this is done at a temperature at which the respective layers are soft. M. Ho.

PROCESSES AND PROPERTIES INDEX

Porous glass. I. I. Kitaigorodskii and L. M. Butt. *Prom. Stroitel. Materialov* 1946, No. 3, 21-31. Powd. glass is sintered in the presence of a gas-generating agent. Of Na_2CO_3, K_2CO_3, $(NH_4)_2SO_4$, kaolin and different kinds of coal, anthracite coal was found to be the best gas-generating agent. The sintering is best effected at 800°. The size of the pores is regulated by varying the time of heating and the amt. of the gas-generating agent. Both glass and coal should be ground to 4000 meshes per sq. cm.

K. K. Stefanovsky

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

Gazostekla (frothed glass) as a building and heat- and sound-insulating material. I. I. Kita[illegible]. *Trudy Moskov. Khim.-Tekh. Inst. Mendeleeva*, 1940, No. 8, pp. 31-42; *Khim. Referat. Zhur.*, 4 [7-8] 94 (1941).—K. describes the principles underlying the production of frothed glass as worked out by him and L. M. Butt, T. N. Keshi[illegible], V. I. Bakumtseva, and V. P. Sorovtsev. Frothed glass is prepared by heat-treating a mixture of glasslike powder and a gas-producing substance. The temperature is 180° to 300° higher than that at which the glasslike powder softens. The structure of the frothed glass depends on the relation between the gas-forning substance and the glasslike powder as well as on the conditions of the thermal treatment. Various kinds of frothed glass are described. See [illegible] 30 [1] 14 (1941).

CH

17

"Peno-glass." I. I. Kitaigorodskii. Steklo[illegible] Prom. 10, No. 1, 2?(1953). Peno-glass (multicellular glass) contains numerous closed pores which are sepd. from each other by very thin glass walls. Such porosity greatly reduces the vol. wt. of the material and its coeff. of thermal cond. It insulates sound and has a high mech. strength. Finely ground and sifted cullet is the basic material used. The structure of Peno-glass depends on (1) the quantity of gas-forming materials (coal, carbonates, sulfates) used, (2) temp., (3) duration of thermal treatment, and (4) granulometric compn. of cullet and gas-forming materials.

M. V. Condoide

ASD-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

Froth-glass. I. I. Kitaigorodskii. Compt. rend. acad. sci. U. R. S. S. 26, 844-6(1940)(in English). —Broken glass powd., to pass a sieve of 900 meshes per sq. cm. is mixed with an agent that emits a gas at 100-150° above the point of incipient softening. The liberated gases, unable to escape from the viscous glass mass, cause it to swell evenly in all layers. As gas-forming agents coal and various carbonates and sulfates were used. Individual modifications of quantities, temp., duration, etc., lead to the production of definite varieties of froth-glass.

A. H. Krappe

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

A. C. S.

Glass 2

Facilitating the melting and planing of Pyrex-type glass. I. I. Kr[illegible], I. O. [illegible], M. L. Kvin[illegible]novich, and I. D. Tyk[illegible]. *Stekol'naya i Keram. Prom.*, 1944, No. 1/2, pp 9-16.—This investigation deals with the determination of the most suitable planing agent and with the effect of size distribution of the batch on the rate of melting. Along with the tested composition, a sample of a composition used currently at the plant was run. This sample acted as control sample. The investigated samples were melted in fire-clay crucibles within a kerosene-fired furnace. After the charge melted, the kerosene was shut off and the furnace window simultaneously opened. Within 30 min. the temperature of the melt dropped to 680° to 700°; the window was then shut, and the samples were kept in the furnace until the next day. The crucibles were broken, and the glass was divided into two equal parts. On these, the presence of unfused material and the presence and relative quantities of bubbles and striae were determined. Of the tested planing agents, WO_3, MoO_3, Na_2SO_4, $(NH_4)_2SO_4$, and NH_4Cl had no effect whatever. Mixes containing these ingredients did not differ from those to which no planing agents were added. Na_2SiF_6 and NH_4NO_3 resulted in samples inferior to those containing no planing agents. The worst results were obtained with the composition currently used at the plant, containing Na_2SiF_6, Na_2SO_4, NaCl, and As_2O_3. Best results occurred with mixes in which was included As_2O_3 or NaCl. Of these, As_2O_3 is preferable; NaCl caused slight yellowing. NaF did induce some planing, but not so much as did As_2O_3 or NaCl. Experiments were then carried out to determine the optimum quantity of the planing agent to be used, in what combinations, if any, and where it should be added—to the mix or the melt. The optimum quantity of As_2O_3 was found to be 0.5% of the batch. Increasing this quantity to 1 or 1.5% did not produce material results. The optimum quantity of NaCl was 0.5%. Increasing this quantity worsened the results. Various combinations of these three agents yielded worse results than when they were used alone. The preferred procedure is to add the entire quantity of the planing agent to the dry mix. Extensive experiments on the effect of size distribution in a batch showed that the smaller the grain size of the sand and the feldspar, the faster the batch melts. This is particularly pronounced when no planing agents are used. If 0.5% of As_2O_3 or NaCl is added to the batch, the size does not make a great deal of difference; thus, when either of these compounds is incorporated in the mix, the particle size of the sand and the feldspar may correspond to a size distribution through 1600 meshes per cm.², i.e., a particle smaller than 0.15 mm. When all of the sand is below 0.08 mm., the glass is colored (greenish yellow to brown). Another series of experiments was carried out to determine the most desirable method of introducing Al_2O_3 into the batch. For this purpose feldspar, alumina containing 91% Al_2O_3, kaolin, and Chasov-Yar clay were tested. The source of Al_2O_3 had no effect on the quality of the glass. The best composition of a Pyrex-type glass, on the basis of these experiments, is sand 72.5, soda 4.0, niter 0.06, boric acid 23.40, feldspar 3.8, and As_2O_3 0.5 kg. The alkali oxides are best introduced as a mixture of soda and niter taken in a ratio of 1:1. The preferred size distribution for the sand and the aluminous material is 0.12- to 0.15-mm. diameter. Such size distribution permits operation at 1480°. M. Ho[illegible]

Glass

A.C.S.

Foam glass—an insulating and floating material. I. I. Kitaigorodskii and T. N. Keshishyan. *Stekol'naya i Keram. Prom.*, 1944, No. 6, pp. 4-8.—The production of foam glass was first reported by I. I. Kitaigorodskii in 1932. The present work deals with the production of white and colored foam glass, the conditions of production of foam glass having closed pores and communicating pores, and the firing and cooling schedule. Foam glass produced by the Mendeleev Institute has the following characteristics: volume weight 0.15 to 0.7 gm. per cc.; true porosity 70.5 to 90%; resistance to compression 50 to 200 kg. per cm.² (in certain samples, up to 1000 kg. per cm.²); coefficient of thermal conductivity 0.1 to 0.15 kcal. per m. hr. degree; moisture absorption (foam glass with closed pores) 0 to 3%; coefficient of sound absorption at 125, 250, 500, 1000, 2000, and 4000 Hertz, 0.26, 0.43, 0.45, 0.64, 0.46, and 0.49, respectively. For making foam glass, a batch of glassy materials (powdered) containing up to 1% of a gas-forming substance is used. The batch is thoroughly mixed and placed in special molds. The molds are placed in a furnace preheated to the softening temperature of the glassy material, and the temperature is rapidly raised to 200° to 270° above the softening point. At this temperature the surface of the powder becomes coated with a fused layer that prevents the escape of gases developed within the powder, and the mass becomes inflated. The inflated mass is kept within the furnace for some time at a lower temperature; then it is slowly cooled and removed from the molds. By properly choosing the size distribution of the powdered material, the quantity and quality of the gas-forming substance, and the fusion temperature, the properties of the foam glass can be regulated at will. Suitable raw materials are industrial glass, glassy slag, and glassy minerals. For the preparation of white foam glass, marble is used as gasifier; for dark or colored glass, coal is used. For the production of foam glass having communicating pores, the content of the gasifying substance should be at a maximum. The fusion should be prolonged at as low a temperature as possible. A batch made up of industrial glass and marble, e.g., should be fused at 700° to 750°. For the production of a foam glass with closed pores, the batch contains a minimum of gasifier and the fusion is carried out for a very short period at high temperature, e.g., 800° to 810°. The annealing for both glasses is alike and is carried out at 100° to 120° above the softening point of the batch. Foam glass of 60-mm. thickness is annealed for 3 hr., and glass 120 mm. thick for 4.5 to 5 hr. The cooling for a 60 mm. thick product is carried out to 200° at 0.8° per min. and below 200° at 2.0° per min. For products 120 mm. thick the cooling is carried out to 200° at 0.7° per min. and below 200° at 1.2° per min. See "Cementable...," *Ceram. Abs.*, 22 [8] 124 (1943). M. Ho.

PROCESSES AND PROPERTIES INDEX

3

287. GLASS CEMENT CERAMICS.—I. I. Kitaigorodsky (Comptes Rendus U.R.S.S., 42, No. 9, 398, 1944). The present production methods of ceramic materials are considered unsatisfactory, since the firing process leads to the formation of a heterogeneous mass in which the ratio of crystalline materials to glass cannot be adequately controlled. It is considered that the main principles underlying truly scientific production are control of the crystal : glass ratio, and the reduction of the amount of glass to a minimum ; such glass as is present should be in the form of a tenuous film, when its brittleness will largely disappear. These principles were applied to the experimental production of acid-resistant ware. Aplite and felsite were used as raw materials ; these were separately bonded with 20% of ground glass cullet. After moulding with 3-8% water the specimens were fired at 1,000° C. Their properties were compared with those of normal fireclay acid-proof ware fired at 1,250-1,300° C. The latter had 8-12% water absorption ; the new product only 2-3·4%. The fireclay product had a crushing strength of 2,000-3,800 lb./sq. in., the new product had a strength of over 8,000 lb./sq. in. when aplite was used, and nearly 12,000 lb./sq. in. when felsite was used. The new type of body was almost completely insoluble in acids, and highly resistant to thermal shock. Other materials which proved suitable for bonding with ground glass were clays, marshallite, slag, silica and corundum. Further results of this work are promised.

ASA-SLA METALLURGICAL LITERATURE CLASSIFICATION

32947
S/030/62/000/001/008/011
B105/B101

24.6800

AUTHORS: Dmitrachenko, V. M., Kitaygorodskiy, A. I., Kozyrev, B. M.

TITLE: Wide-range spectrometer for nuclear quadrupole resonance

PERIODICAL: Akademiya nauk SSSR. Vestnik, no. 1, 1962, 74 - 76

TEXT: Nuclear quadrupole resonance indicates slightest changes in a molecular electron cloud. The search for the unknown signal must be conducted in a wide frequency interval. For this purpose, a spectrometer for frequency ranges from 1 to 600 - 800 Mc/sec, which was designed jointly by physicists and radio engineers, had to be built. At the suggestion of the Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental Organic Compounds of the Academy of Sciences USSR) and the Fiziko-tekhnicheskiy institut Kazanskogo filiala Akademii nauk SSSR (Physicotechnical Institute of the Kazan' Branch of the Academy of Sciences USSR), work was started in 1960 for the purpose of developing a wide-range quadrupole radiospectrometer. The instrument was built under the direction of B. N. Pavlov and D. Ya. Shtern. V. I. Robas, I. A. Safin, K. G. Semin, and E. I. Fedin were consulted. Samples of the

Card 1/2

32947
S/030/62/000/001/008/011
B105/B101

Wide-range spectrometer for...

ЯКС-1 (YaKS-1) spectrometer were built, which permits investigations in the range from 1 to 600 Mc/sec. In the supraregenerator for 90 - 400 Mc/sec and in the detector, the sample can be kept at constant temperature between -196 and +120°C. A lot of YaKS-1 spectrometers is to be built in 1962. There are 4 figures.

X

Card 2/2

KITAYGORODSKIY, Aleksandr Isaakovich; FEDIN, Erlen Il'ich; SHUSTOVA, I.B., red.; RAKITIN, I.T., tekhn. red.

[Atomic structure and the properties of solids] Atomnoe stroenie i svoistva tverdykh tel. Moskva, Izd-vo "Znanie," 1963. 47 p. (Narodnyi universitet kul'tury: Estestvenno-nauchnyi fakul'tet, no.6) (MIRA 16:9)
(Matter--Constitution) (Solids)

AFANAS'YEV, Vitaliy Arkad'yevich; KITAYGORODSKIY, A.I., doktor fiziko-matem. nauk, prof., otv. red.; VOZHEYKO, I.V., red. izd-va; POPOVA, M.G., tekhn. red.

[Physical methods for studying the molecular structure of organic compounds]Fizicheskie metody issledovaniia stroeniia molekul organicheskikh soedinenii. Frunze, Izd-vo AN Kirgiz.SSR, 1963. 247 p. (MIRA 16:10)
(Organic compounds) (Molecular structure)

VAYNSHTEYN, Boris Konstantinovich; KITAYGORODSKIY, A.I., prof., otv. red.; FEYGIN, L.A., red.izd-va; PRUSAKOVA, T.A., tekhn. red.

[Diffraction of X-rays by chain molecules] Difraktsiia rentgenovykh luchei na tsepnykh molekulakh. Moskva, Izd-vo Akad. nauk SSSR, 1963. 371 p. (MIRA 16:7)
(Polymers) (X-ray diffraction examination)

LANDAU, Lev Davidovich, laureat Leninskoy i Nobelevskoy premiy akademik; KITAYGORODSKIY, Aleksandr Isaakovich, prof.; VERES, L.F., red.; GRIGOROVA, V.A., red.; KRYUCHKOVA, V.N., tekhn. red.

[Physics for all; motion heat] Fizika dlia vsekh; dvizhenie, teplota. Moskva, Fizmatgiz, 1963. 390 p. (MIRA 16:11)
(Physics)

CHICHIBABIN, Aleksey Yevgen'yevich. Prinimali uchastiye: REUTOV, O.A.; KITAYGORODSKIY, A.I., prof.; LIBERMAN, A.L., doktor khim. nauk; BAGDASAR'YAN, Kh.S., doktor khim. nauk; PLATE, N.A., kand. khim. nauk; KOLOSOV, M.N., kand. khim. nauk; BOTVINIK, M.M., doktor khim. nauk; STEPANOV, V.M., kand. khim. nauk; MEL'NIKOV, N.N., prof.; DEREVITSKAYA, V.A., doktor khim. nauk; LIBERMAN, A.L., red.; SERGEYEV, P.G. [deceased]; ROMM, R.S., red.; SHPAK, Ye.G., tekhn. red.

[Basic principles of organic chemistry] Osnovnye nachala organicheskoi khimii. Izd.7. Pod red. P.G.Sergeeva i A.L. Libermana. Moskva, Goskhimizdat. Vol.1. 1963. 910 p. (MIRA 16:10)

1. Chlen-korrespondent AN SSSR (for Reutov).
(Chemistry, Organic)

ALEKSEYEV, N.V.; KITAYGORODSKIY, A.I.

Structure of cyclohexane. Zhur.strukt.khim. 4 no.2:163-166 Mr-Ap '63. (MIRA 16:5)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Cyclohexane) (Chemical structure)

AVOYAN, R.L.; KITAYGORODSKIY, A.I.; STRUCHKOV, Yu.T.

Crystal structure of 5,6-dichloro-11,12-diphenylnaphthacene. Zhur. strukt.khim. 4 no.4:633-636 Jl-Ag '63. (MIRA 16:9)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Naphthacene crystals)

KITAYGORODSKIY, A.I.; TSVANKIN, D.Ya.; [illegible], Yu.K.

Large periods in polythylene terephthalate films. Vysokom.soed. 5 no.7:1062-1068 Jl '63. ([illegible] 16:9)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Terephthalic acid)
(X rays--Scattering)

KITAIGORODSKIY, I. I.

1951

[illegible]

Electron Microscope and Investigation of the Structure of Ceramic Materials. I. I. Kitaigorodskiy. (C. R. Acad. Sci. U.R.S.S., [illegible] Sept. [illegible] Vol. [illegible], No. [illegible], pp. [illegible]) (In English.)

KITAIGORODSKII, I.I.

C

4-5 -50

Isothermal shaping of glass. I. I. Kitaigorodskii and S. A. Dubnik. *Doklady Akad. Nauk S.S.S.R.*, 50, 181-84 (1945).—The essential feature of this method is the creation of an isothermal condition in each given layer (section taken parallel to the main plane) of the shape, with unavoidable temperature gradient between the outer and inner layers (up to the moment of complete solidification) and with equalization of the temperature of symmetrically situated layers. Thus, in shaping a plane glass object (plate or sheet), the side facets remain plastic up to the moment of complete solidification, thereby facilitating uniform settling. The creation of an isothermal condition and of equalized tensions within the object being shaped is accomplished by using isothermal molding equipment. A chrome-plated steel mold was used to prepare, at 1145°C., one thousand 200 x 200 x 15 to 35 mm. plates from Fourcault glass having a composition of SiO_2 72, Al_2O_3 0.2, Fe_2O_3 0.1, CaO 9.0, MgO 0.2, SO_3 0.5, K_2O 1.0, and Na_2O 17.0%. By means of electric heating and proper exterior insulation the temperatures of the die and punch were raised from the usual 225° and 125° to 540° and 450°, respectively. Geometricity of the plates was not inferior to that of polished plates. Variation in length and width was not over ±0.5 mm. against an allowable +1 to 2 mm.; thickness difference was 0.79 mm. against an allowable 1 mm. Not one of the plates cracked when removed from the mold and cooled in the air; of the 250 plates subjected to grinding and polishing, not one cracked during the process.

B. Z. K.

PROCESSES AND PROPERTIES INDEX

CA

Glass melting in a uniflow tube. I. I. Kitaigorodskii. U.S.S.R. 68,618, Dec. 31, 1946. The glass batch made up of powd. materials is delivered for melting into a vertical, horizontal, or inclined uniflow tube. The tube is made of highly refractory materials, is externally heated, and is connected to a forced degasification app. This arrangement is said to raise the efficiency coeff. of tank furnaces, seldom exceeding 30%. M. Hosch

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA

19

Ceramic products. I. I. K[illegible]. U.S.S.R. 67,167, Sept. 30, 1946. A mixt. of cryst. materials, such as grog or alumina, with 7-60% of powd. glass is molded and fired at a temp. insuring complete fusion of the powd. glass. M. Hosch

PROCESSES AND PROPERTIES INDEX

CA

24

Slag product. I. I. Khodgovskii. U.S.S.R. 67,307, Oct. 21, 1946. Bowen slag is mixed with ground glass or some other low-melting silicate. The mixt. is molded in desired shapes and fused at 900-1100°. M. Hosch

410.114 METALLURGICAL LITERATURE CLASSIFICATION

CA

19

Foam glass. I. I. Kitaigorodskii. U.S.S.R. 67,4[illegible], Dec. 31, 1946. Foam glass is made by adding to a mixt. of silicates enough limestone, dolomite, and the like, to insure a fusion temp. below 1000°. Into this mixt. are incorporated gas-forming substances, such as Si and Ca carbides. M. Hosch

22

B

The Refractories Problem in Connection With the Use of Oxygen in the Steel Industry. I. I. Kitaigorodskii and P. P. Budnikov. Henry Brutcher (Altadena, Calif.), Translation No. 2061, 1948, 6 pages. Condensed from *Kislorod* (Oxygen), v. 3, no. 2-3, 1946, p. 29-31.

A general discussion of paper of above title by S. V. Glebov. Includes data on vitrified corundum and zircon cement refractories and refractories of zircon+chromium oxide+calcium oxide for tuyeres in oxygen-blown converters. Gives particulars on a new chrome-dolomite brick for basic O.H. furnaces; its manufacture, properties, and actual performance; test data on cased chrome-dolomite concrete, and on zircon brick, in O.H. furnaces; and details on manufacture of magnesia-spinel refractories and their properties.

METALLURGICAL LITERATURE CLASSIFICATION

C

Glass-cement binding of crystalline bodies. I. I. Kitaigorodskii. *Steklo i Keram. Prom.*, 1946, No. 4-5, pp 9-12. The synthesis of crystalline and glass phases as a method of preparing ceramic products is based on the following conditions: (1) the quality and quantity of the crystalline and glass phases in the ceramic body must be constant; and (2) the content of the glass phase must be reduced to a minimum so that it will have only a cementing function. The composition and proportions of the crystalline and glass phases and the nature of the heat treatment are selected on the basis of the specifications which the products must meet. Refractory materials such as carbides and the oxides of Zr, Mg, and Cr should be used as the crystalline phase in the manufacture of superrefractories. The glass binder can be made from glasses having high softening points. To prepare superhard materials it is necessary to use substances having high hardness, bonded by an appropriate glass. Petrographic studies of various products indicate that the thickness of the glass film is 2 μ or less. Electronmicrographs show that it is possible to distinguish between the crystalline and glass phases and that the glass phase and the crystalline grains are tightly bonded, with most of the grains surrounded by a glass film. Characteristics of a glass-bonded corundum refractory are listed. An outline is given for the manufacture of glass-bonded corundum, using alumina, ZnO, window glass, and dextrin. R. Z. K.

C

Alkali-free and weakly alkaline technical glasses. I. I. Kitaigorodskii and S. M. Kuznetsova. Abstracted in Metal Sojuz i Khim. Prom., 1946, No. 4-5, pp. 21-22. The system SiO_2-Al_2O_3-MgO-BaO offers great possibilities for obtaining technical glasses. The glasses are readily melted at 1400°. A study of their ability to crystallize showed that the critical temperature for the best glasses is 900°. The glasses have an extraordinarily high resistance to alkali and stability in water, but they are destroyed in boiling 2 N acid. Softening occurs at 700° to 800°; the working interval is very short. The glasses are recommended for the manufacture of equipment in which high temperatures are developed. B. Z. K.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

C

Gas inclusions in mirror glass and methods of their elimination. I. I. KITAIGORODSKII AND S. M. KUBOVSKAYA. Abstracted in *Steklo i Keram. Prom.*, 1946, No. 7-8, p. 17.—An analysis of the glass melt and of the finished mirror glass of the Konstantinovsk glass plant gave the following facts: (1) Small bubbles contain mostly SO_2. (2) In the second stage of melting, even toward the end of fining, the bubbles contain components of the generator gas and combustion products. (3) The composition of the gases in the bubbles does not change essentially during the melting and fining periods. (4) Small bubbles in the finished product contain SO_2 and O_2, while the large bubbles contain air. It is suggested that coal with a minimum content of S be used for gasification and that the fining period be extended from 90 to 240 min. B.Z.K.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

[illegible], I. I. [illegible] corundum and alumina refractories. *Ogneupory*, 11 [2] 55-[illegible] ([illegible]). Investigation was extensive and was concerned with the preparation of the solid phase, composition and quantity of glass, temperature of firing, and physicochemical properties of alumina and electrocorundum refractories. Starting materials were corundum, cullet, and alumina. Cullet was ground to pass a sieve having 10,000 openings/cm². A charge of corundum or alumina and 3, 6, 9, 12, or 24% by weight of glass was ground to pass a sieve of 6400 openings/cm². Briquettes were made with a bond of benzene solution of rubber and fired at 1400°C. A fraction of γ-alumina, finely ground and mixed with 1% ZnO, was calcined at 1400°, the resulting product was almost completely α-alumina. Briquettes made from glass and calcined finely ground α-alumina and fired at 1450°C had a water absorption of 0.1% and a compressive strength of 4200 kg/cm.² compared with 21% and 420 kg/cm² for briquettes made with untreated γ-alumina. The neutral glasses were most active with respect to the alumina; the quartz and Pyrex glasses caused the destruction of the briquettes during the firing. Increase in glass content from 3% to 12% results in a drop in water absorption from 5.80% to 0.10% while the setting stays at about 12 to 13%. In the case of briquettes made from electrocorundum, an increase in glass content from 3 to 9% caused the water absorption to drop from 12.5 to 9.2% while the setting increased up to 3%. By raising the firing temperature from 1450° to 1600°C the water absorption was reduced to 4.20% while the setting was increased to 5.5%. Both alumina and electrocorundum briquettes had a refractoriness of 1900°C. In general, the new material fired at 1450° to 1600°C is not inferior to ordinary corundum superrefractories fired at 1700° to 1800°C. This method should find application in making shapes which must meet rigid specifications for porosity and corrosion and erosion resistance.

PROCESSES AND PROPERTIES INDEX

C

4-C-4

Preparation of unfired acid-resistant shapes from marshallite by pressing. I. L. Krialunkorskii and V. S. Chentsova. *Zhur. Priklad. Khim.*, 19 (10-11) 1157-60 (1946). Specimens were prepared under a pressure of 150 kg./cm.² from a mixture of cement (96 powdered quartz, 4% Na_2SiF_6, and 30 cc. liquid glass of 30° Bé) and marshallite taken in the ratio of 1:1. The specimens were subjected to mechanical and thermal tests, after which they were used as nozzles in sulfuric acid towers with satisfactory results. Before they can be used for wall material, further research is necessary to reduce the porosity. B. Z. K.

ASS-SLA METALLURGICAL LITERATURE CLASSIFICATION

KITAIGORODSKII, I. I.

C

VERSATILE USES OF ZIRCONIA-CONTAINING NEPHELINE-SYENITES. I. I. Kitaigorodskii. Compt. rend. acad. sci. U.R.S.S., 51, 619-20 (1946); abstracted in Chem. Zentr., 118 [1/2] 83 (1947). -- Nepheline-syenite, which is abundant in Russia, can be used as starting material for the manufacture of technical glasses and ceramic materials after the Zr-rich constituents have been separated for the manufacture of highly refractory apparatus with a ZrO_2 base. The undesirable content of Fe_2O_3 can be removed by roasting with $MgCl_2$ M.Ha

CA 19

Alkali-free and weakly alkaline technical glasses. I. I. Kitaigorodskii and S. M. Karovskaya. *Steklo i Keram. Prom.* 1946, No. 418, 21-22; (*Ceram. Abstracts* in *J. Am. Ceram. Soc.* 31, No. 4, [illegible]). The system SiO_2-Al_2O_3-MgO-BaO offers great possibilities for obtaining tech. glasses. The glasses are easily melted at 1400°. A study of their ability to crystallize showed that the crit. temp. for the best glasses is [illegible]°. The glasses have an extraordinarily high resistance to alkali and stability in water, but they are destroyed in boiling 3 N acid. Softening occurs at 780° to 840°; the working interval is very short. The glasses are recommended for the manufacture of equipment in which high temps. are developed. R. D. H.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

CA 19

Apparatus for drawing sheet glass. I. I. Kitaigorodskii, S. I. Korolev, and T. D. Koroleva. U.S.S.R. 66,012, Aug. 31, 1947. M. H.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

CA

17

Ceramic bodies. I. I. Kitaigorodskii. U.S.S.R. 66,186, Aug. 31, 1947. Nonvitreous ceramic bodies are formed from a cryst. material, such as corundum or mullite, and 2-6% by vol. of highly cryst. glass powder. The glass powder may be composed of SiO_2 55-60, Al_2O_3 15-25, CaO 15-25, and Na_2O up to 5%. M. Hosch

METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

CA 19

Glass-making batch. I. I. Kitaigorodskii. U.S.S.R. 69,308, Sept. 30, 1947. To a glass batch are added carnallite 1-2 and pyrolusite 0.20-0.30%. This addn. is made to remove foam and to increase the heat transparency of the glass. M. Hosch

I. I. KITAYGORODSKIY

METALLURGICAL LITERATURE CLASSIFICATION

CA

19

Shaped products of foam glass. I. I. Kitaigorodskii. U.S.S.R. 69,820, Dec. 31, 1947. For the production of bricks, blocks, and the like, of foam glass, it is important that the mix used have a wide cooling interval, that the cooling be even and gradual, and uniform throughout the entire thickness. It is therefore important that slow solidifying glasses having a minimal crystn. tendency and a low coeff. of thermal expansion be used. Suitable dry mix consists of: powd. glass of appropriate compn. 93-97, gas-yielding substance 1-3, and powd. asbestos 3-4%. M. Hosch

G. C.A. 43.7661e.

B

2 2

434. **Blended Reducing Mixtures for Sulfate Batches.** (In Russian.) I. I. Kitaigorodskii, G. G. Senturin, and V. A. Rishina. *Glass and Ceramic Industry* (U.S.S.R.), no. 4, 1947, p. 6-8.

In the U.S.S.R., sodium sulfate is extensively used instead of soda ash. One of the chief drawbacks in the melting of sulfate is the rapid decomposition of the reducing agents which are used. Results of a series of experiments on a number of different reducing agents and blended mixtures of them are described and tabulated. A mixture of lignite and coke having a particle size of 0.385 mm. was found to be the most satisfactory. The results were verified on a commercial scale.

METALLURGICAL LITERATURE CLASSIFICATION

KITAYG ROD'KIY, I. I.

PA 18T26

USSR/Refractory Materials Aug 1947

"'Steklokorund' -- A New High Refractory Material," Prof I. I. Kitaygorodskiy, N. V. Solomin, A. I. Polinkovskaya, S. F. Volchanov, 2 pp

"Legkaya Promyshlennost'" Vol VII, No 8 p. 23-4

Technical description of new refractory material (steklokorund) including properties of the material, ingredients, etc.

18T26

KITAYGORODSKIY, I. Ye, Prof.

Chemical Engineering

Graduate, Moscow Chemico-Technological Institute Mendeleyev

On - Technology of Silicates & of Building Materials, Co-author

Soviet Source: P: Khimicheskaya Promyshlennost' Dec. 1947, Moscow
Abstracted in USAF "Treasure Island" Report No. 35681, on file in Library of Congress,
Air Information Division.

PA 5T84

KITAYGORODSKIY, I. I.

May 1947

USSR/Minerals
Cement
Glass

"Theory of Glass-Cement Binding of Crystal Bodies," I. I. Kitaygorodskiy, N. V. Solomin, 2 pp

"Dok Akad Nauk SSSR, Nova Ser" Vol LVI, No 6

Explains great stability of a glass-cement body in operation of highly aggressive fusion and its high mechanical qualities in temperature exceeding melting point of glass by several hundred degrees. Submitted by Academician D. S. Belyankin, 23 Dec 1946.

5T84

Highly refractory zircon-containing brick produced from a base of the zircon concentrate from Mariupol. I. I. Khizhnyakovskii (Chem.-Tech. Mendeleev Inst., Moscow). *Doklady Akad. Nauk S.S.S.R.* 56, 839-41(1947); *Chem. Zentr.* 1947, II, 1088-9.—A concentrate, high in zircon, obtained from deposits in the Mariupol region (Ukraine) proved very satisfactory for the production of highly refractory, corrosion-resistant products with low coeff. of expansion and free from polymorphic transitions. The material was heated to 1450°, then divided, and part of it freed from Fe. Test pieces were prepd. from both batches by subjecting to a pressure of 1000 kg./sq. cm. No addn. of plasticizer or cementing agent was required. The refractoriness of the Fe-free material was superior to that of the part contg. Fe. The Fe-free concentrate contained ZrO_2 61.80, SiO_2 31.80, Fe_2O_3 0.13, Al_2O_3 2.80, and Na_2O 3.00%.

M. G. Moore

KITAYGORODSKIY, I.I.

Kitaygorodskiy, I.I. "Complex use of mariupolites," in symposium: Syr'sovaniya, Moscow-Leningrad, 1948, p. 79-84

SO: U-2888, Letopis Zhurnal'nykh Statey, No. 1, 1949

KITAYGORODSKIY, I. I.

Kitaygorodskiy, I. I. - "Toward advanced technology in the manufacture of glass," Trudy Tekhn. konf-tsii rabotnikov stekol. prom-sti, Moscow, 194[illegible], p. 12[illegible]-3.

SO: U-3600, 10 July 53, (Letopis 'Zhurnal 'nykh Statey, No. 6, 1949).

PA 5/49T18

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000722920005-

USSR/Engineering May 48
Ceramics
Glass - Bonding

"Glass Cementation Ceramics," I. I. Kitaygorodskiy, 5 pp

"Priroda" No 5

Discusses development of the technique whereby glass is used as the bonding material in ceramic technology. Describes basic mixing and firing methods.

5/49T18

Glass corundum. I. I. Kitaigorodskii, N. V. Solomin, A. I. P[illegible]ava, and S. P. V[illegible] (*Ogneupory*, 13 (1) 22-28 (1948)). In the laboratory, technical alumina was mixed with 1% ZnO and fired to 1450°C. to insure maximum transformation of γ-alumina to α-alumina prior to mixing the charge. Organic binder (not specified) and water were added to the charge in amounts required for semidry ramming (hand and pneumatic), and the bars were fired at 1650° to 1800°. For comparison, bars were prepared from 77% Chasov Yar clay grog and 23% Chasov Yar binding clay. Compared with the multigrog product, the glass corundum had a firing shrinkage 7 to 8 times as large, an apparent porosity 2 to 3 times as large, and a resistance to sulfate liquors 12 to 23 times as great. Sulfite cellulose extract is recommended as a plasticizer because of its slow decomposition within a wide temperature range. The firing shrinkage was considerably improved by firing a portion of the charge in the form of briquettes, grinding the briquettes, and adding the glass-cement grog in amounts of [illegible] to 80% to the original charge. On a commercial scale, use was made of technical alumina analyzing not less than 97.8% Al_2O_3, not over 0.4% SiO_2, not over 0.08% Fe_2O_3, not over 0.7% Na_2O, and ignition loss about 1.0%. As a glass binder, cullet of ordinary composition was used. Bars were prepared by pneumatic ramming. Air shrinkage was less than 1%. Products were fired for ten days and held for 24 hr. at a maximum temperature of 1800° to 1850°C. The properties were better than those of laboratory specimens; bulk specific gravity was 3.08, and apparent porosity was about 11%. B.Z.K.

ASO-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA 2

Ilya Vasil'evich Grebenshchikov and the role of glass in modern industry. I. I. Kitaigorodskii. *Uspekhi Khim.* 17, 150-7([illegible]).—[illegible] summary of scientific glass manufacture in Russia and the role played in it by Grebenshchikov. 60th birthday jubilee. Portrait.

G. M. Kosolapoff

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA

19

The process of glass formation in the heating of a four-component magnesial batch. I. I. Kitaigorodskii and I. D. Tykachinskii (D. I. Mendeleev Chem. Technol. Inst.). *Doklady Akad. Nauk S.S.S.R.* 59, 1149-52 (1948).—The batch, SiO_2 73.80, CaO 8.66, Na_2O 13.93, MgO 3.86%, corresponding to the 5-component batch recommended for Fourcault sheet glass production, SiO_2 71.5, CaO 8.5, Na_2O 15.0, MgO 3.5, Al_2O_3 1.5, with Al_2O_3 omitted but with the same ratios of the remaining 4 components, was made up from pure Na_2CO_3, $CaCO_3$, $MgCO_3$, and SiO_2 (0.08-mm. grains) dried at 180°. Thermograms of this quaternary mixt. show the same thermal effects as the ternary batches $MgCO_3$-Na_2CO_3-SiO_2 and $CaCO_3$-Na_2CO_3-SiO_2; the same applies to the plot of loss of wt. as a function of temp. By concurrent indications of the 2 plots, elimination of CO_2 begins at 300° and becomes more intense at 380°; the heating arrest becomes particularly pronounced at 600°, with a slight max. at 610°, corresponding to max. dissocn. of $MgCO_3$ and an intense reaction $MgNa_2(CO_3)_2 + SiO_2$. The arrest continues in the range 600-800° owing to the reactions $CaNa_2(CO_3)_2 + 2SiO_2 \rightarrow CaSiO_3 + Na_2SiO_3 + 2CO_2$; $CaCO_3 + SiO_2 \rightarrow CaSiO_3 + CO_2$; $Na_2CO_3 + SiO_2 \rightarrow Na_2SiO_3 + CO_2$. The endothermal effect at 780-880°, max. around 880°, corresponds to fusion of a series of eutectics of silicates of Ca, Mg, and Na and of $CaNa_2(CO_3)_2$ with Na_2CO_3. The peak at 858°, corresponding to fusion of Na_2CO_3, is blurred on the quaternary thermogram but is distinct on the ternary curves. The last endothermal effect, at 915°, corresponds to dissocn. of the remainder of $CaCO_3$. From 960° up, heating is accelerated, showing an exothermal effect with a broad max. 1080-1180°, reflecting the reactions $MgO + SiO_2 \rightarrow MgSiO_3$ and $CaO + SiO_2 \rightarrow CaSiO_3$. Microscopic examn. of batches heated to various temps. from 340 to 1200° shows: formation of the double salts $MgNa_2(CO_3)_2$ and $CaNa_2(CO_3)_2$ below 400° (the former salt appears at 340°); formation of Mg silicates at 480°; formation of Ca silicates, and interaction with Mg silicates to pyroxene crystals, from 800° upward; appearance of a liquid phase at 800° (i.e. below the melting temp. of Na_2CO_3); fusion of all components (with the exception of some undissolved but corroded quartz grains) at 1200°. On the basis of the results of all 3 methods of study of both the quaternary and the binary systems, the reactions taking place in $MgCO_3 + CaCO_3 + Na_2CO_3 + SiO_2$ of the given compn. are: formation of $MgNa_2(CO_3)_2$ below 300°; beginning dissocn. of $MgCO_3$, 310°; beginning formation of $CaNa_2(CO_3)_2$ below 400°; beginning dissocn. of $CaCO_3$, 420°; reaction $MgNa_2(CO_3)_2 + 2SiO_2 \rightarrow MgSiO_3 + Na_2SiO_3 + 2CO_2$, 340-620°; reaction $MgCO_3 + SiO_2 \rightarrow MgSiO_3 + CO_2$, 410-700°; reaction $CaNa_2(CO_3)_2 + 2SiO_2 \rightarrow CaSiO_3 + Na_2SiO_3 + 2CO_2$, 585-900°; intense progress of the reaction $Na_2CO_3 + SiO_2 \rightarrow Na_2SiO_3 + CO_2$, 700-900°; reaction $CaCO_3 + SiO_2 \rightarrow CaSiO_3 + CO_2$, 600-920°; max. rate of dissocn. $MgCO_3 \rightarrow MgO + CO_2$, 610°; appearance of liquid (eutectics of Mg and Na silicates and SiO_2 and of double carbonates with Na_2CO_3), 780-880°; max. rate of dissocn. $CaCO_3 \rightarrow CaO + CO_2$, 915°; intense progress of the reaction $MgO + SiO_2 \rightarrow MgSiO_3$, 980-1180°; intense progress of $CaO + SiO_2 \rightarrow CaSiO_3$, 1010-1180°; reaction $CaSiO_3 + MgSiO_3 \rightarrow CaSiO_3.MgSiO_3$, 900-1200°; soln. of SiO_2 and of Ca and Mg silicates in the melt, 1130-1200°. In the quaternary batch with MgO, all reactions of dissocn. of carbonates and of silicate formation begin earlier and progress more intensely than in the ternary CaO-Na_2O-SiO_2. N. Thon

KITAYGORODSKIY, I.I.; STEPANOV, G.A.

Ceramic bodies and products. Patent U.S.S.R. 78,331 , Dec.31, 1949.
(CA 47 no.19:10194 '53)

C

Glassforming in a sulfate charge. I. I. Kitaigorodskii, O. G. Savvateeva, and V. A. Reshina. *Steklo i Keram.* 6 [1] 3-4 (1949).—In preliminary experiments, mixtures of Na_2SO_4 and SiO_2 with mole ratios of SiO_2 : Na_2O ranging from 1 to 4 were heated for 1 hr. at 600, 700, 800, 900, 1000, and 1100° in the presence of graphitized electrode C, coke, coal, activated C, charcoal, and $Si(C_2H_5)_4$; electrode C proved the most resistant to combustion. Mixtures of quartz sand, Na_2SO_4, and electrode C (6, 7, and 8%, by wt. of sulfate) were treated as follows: (1) gradually heated to 700, 800, 900, 1000, 1100, 1200, 1250, and 1300° and kept at temperature for 15 to 120 min.; (2) placed in a furnace previously heated to the desired temperature and then kept for 15 to 120 min. At 800° and 1000° there was no difference in extent of decomposition of sulfate between treatments 1 and 2. Above 1000° the reaction in the mixture of treatment 1 proceeded more intensively; at 1250° the charge in 1 was completely vitrified while the charge in the mixture of treatment 2 looked like fused rock. Best results were obtained with 7% reducing agent. Experiments with a charge consisting of SiO_2 71, Al_2O_3 1.5, CaO 8.5, MgO 3.5, and Na_2O 15.5% to which was added 7% reducing agent (electrode C) and 1% CaF_2 indicate that maximum decomposition of the sulfate occurs at 1300° by method 1. B.Z.K.

PROCESSES AND PROPERTIES INDEX

C.

Crystalline structured ceramic and superrefractory materials. I. I. Kitaigorodskii. *Steklo i Keram.*, 6 [11] 5-9 (1949). The application of the term "glass-cemented" to crystalline ceramic materials having a glass binder is misleading; it stresses the importance of the vitreous phase, which is insignificant, and ignores the preponderant crystalline phase which determines the characteristics of the ceramic material. The term "crystalline structured ceramic material" is suggested to emphasize the role of the structure of the phase composition. Crystalline ceramic products are divided into mineral-ceramic, glass-cemented-ceramic, and mineral-metalloceramic groups. The solid phase and binder of each group are given with its applications.

B Z K

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

USSR/Chemistry - Glass Formation Jan 49
Chemistry - Sulfates, Glass Refining by

"Kinetics of Glass Formation in Sulfate Furnace Charges," I. I. Kitaygorodskiy, G. G. Sentyurin, V. A. Rishina, Moscow Chemicotech Inst imeni D. I. Mendeleyev, 3 pp

"Dok Ak Nauk SSSR" Vol LXIV, No 1 p 107-9

PA 26/49T2

Process of glass formation in sulfate furnace charges is complicated by lack of heat resistance in the reducers, which burn out prematurely and are absent at high temperatures when most necessary. Recommends that sulfate charges be supplied

26/49T2

USSR/Chemistry - Glass Formation (Contd) Jan 49

to the glass furnace in a region heated to temperature of not less than 1,350° C. Submitted 6 Nov 48.

26/49T2

KITAYGORODSKIY, I. I.

KITAYGORODSKIY, I. I.

FA 25/49T8

USSR/Chemistry -- Glass
Chemistry -- Clinkering

Jan 49

"Obtaining High-Siliceous Porous Bodies at Low Temperatures," I. I. Kitaygorodskiy, Moscow Chemicotech Inst imeni D. I. Mendeleyev, 3 pp

"Dok Ak Nauk SSSR" Vol LXIV, No 2 p 217-21

Describes new method for obtaining high-siliceous porous bodies at temperature of only 750°, instead of 1,500° required by usual method of clinkering quartz glass powders. Submitted 6 Nov 48

[redacted]

25/49T8

KITAYOORODSKIY, I. I.

"Olass Painting and Silencing," 1950

PROCESSES AND PROPERTIES INDEX

C

5

Glass and Glassmelting (Steklo i steklovarenie). I. I. Kitaigorodskii. Promstroiizdat, Moscow, 1950. 416 pp. Price 20.40 rubles. Reviewed in *Steklo i Keram.*, 8 [2] 22 (1951).—Investigations by K. in the fields of physical chemistry and technology of glass are described. New types of glass and a critical analysis of existing furnaces are given. Further development of the glassmelting process is indicated on the basis of research on the kinetics of glassmelting. The application of glass in modern technology and construction is discussed. B. Z. K.

ASA-SLA METALLURGICAL LITERATURE CLASSIFICATION

BCS

Refractories

1118. Glass-cement ceramics.—I. I. KITAIGORODSKII (Ogneupory, No. 6, 244, 1950; abstracted in Stariee, 28, 238, 1950). To conclude the discussion on glass-cement ceramics (see Abstr. 1018-1021, 1780 (1950)) the author remarks that the action of the glass mass in glass furnaces is specific and the experience gained from the use of refractories in the steel industry cannot be applied in the glass industry. Fire-bricks and silica bricks, which formerly could be used in glass tanks, because of the low temp. (1,300°–1,400° C.) and the small size of furnace, are not suitable for intensive melting at 1,500°–1,600° C. No further progress of glass technology is possible without the development of strong, highly refractory corundum blocks with zero porosity. Kiln firing at 1,800° C. must be realised in the shortest possible time.

C

5

Frothed glass and its commercial production. I. I. Kreal-oocnoml. *Steklo i Keram.*, 7 (4) 3-6 (1930).—Production of frothed glass in the Soviet Union was scheduled for 1932. Methods of manufacture, characteristics, and applications are given.
B Z.K.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

KITAYGORODSKIY, I.I.

PHASE I TREASURE ISLAND BIBLIOGRAPHICAL REPORT AID 597 - I

BOOK

Call No.: AP437939

Authors: KITAYGORODSKIY, I. I., KACHALOV, N. N. and others

Full Title: GLASS TECHNOLOGY. 2nd ed., rev.

Transliterated Title: Tekhnologiya stekla. Izd. 2-e, perer.

PUBLISHING DATA

Originating Agency: None

Publishing House: State Publishing House for Literature on Building Materials

Date: 1951 No. pp.: 767 No. of copies: 6,000

Editorial Staff

Editor-in-Chief: Kitaygorodskiy, I. I.

PURPOSE: Approved by the Ministry of Higher Education as a textbook in courses in "Technology of Silicates".

TEXT DATA

Coverage: This is a textbook on the theory and principles underlying glass technology and on the physical and chemical properties of glass. Glass production techniques: types of glass-melting furnaces and materials for their construction; mechanical control and automatic regulation devices; processing, forming, finishing and specific treatment of glass for special purposes, e.g., optical glass, glass for electric and electronic appliances, laboratory glass, laminated safety